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THE MASS MEDIA AND HEALTH PRACTICES
EVALUATION IN THE GAMBIA:

A REPORT OF THE PROCESS EVALUATION

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EXECUTIVE SUMMARY

This summary reports the major findings from the Process Evaluation of the U.S. AID Mass Media and Health Practices activity in The Gambia. The program in The Gambia was known as the Mass Media for Infant Health Project. It was an undertaking of the Department of Medical and Health in the Ministry of Health, Labour, and Social Welfare with the collaboration of the Academy for Educational Development. The evaluation was performed by Stanford University's Institute for Communication Research and Food Research Institute, and by Applied Communication Technology. Both the intervention and the evaluation were funded by the Office of Education and the Office of Health of the Bureau of Science and Technology, United States Agency for International Development. The USAID Mission in Banjul and the Department of Medical and Health have provided additional support and cooperation.

The purposes of the Mass Media for Infant Health Project were: to introduce home-based oral rehydration therapy and other behaviors related to the treatment and prevention of infant diarrhea in the rural areas of The Gambia; and simultaneously to develop improved methods of using mass communication in conjunction with existing health services in an integrated campaign. The target behaviors included treatment of acute cases, preventive actions that mothers can perform, and related nutritional and breastfeeding practices. The treatment behaviors involved mixing and administering in the home an oral rehydration solution made from water, sugar, and salt (WSS).

The Mass Media for Infant Health intervention consisted of an integrated campaign carried out through broadcast, print, and interpersonal channels to deliver a coordinated set of messages about a fairly narrow set of issues - responses to infant diarrhea. The knowledge and behavioral objectives and the strategies for behavioral change were developed using intensive planning research and the principles of behavioral analysis. The campaign incorporated elements of social marketing and systematic development of messages using formative evaluation. The project worked with professionals in the Department of Medical and Health and at Radio Gambia to create an environment in which these methods would remain in use after the project was completed.

The evaluation tracked the process of the intervention's effects during its two years of effort, as well as measuring the overall impact at the end. It used a model of the program effects that stipulates that, in order for a final health status outcome to be achieved, a series of interim steps must be successfully completed. The evaluation of these steps included investigating whether: the target population had access to the channels of communication used by the campaign; the messages actually reached the population through those channels; the content of the messages was learned and retained by the audience; members of the target audience actually changed their behaviors in response to the campaign; and the health status of children improved as a result of these changes in behavior.

The evaluation found that the introduction of the oral rehydration solution (ORS) was successful. More than half of all episodes of diarrhea were being treated with WSS during the second year of the campaign. Knowledge of how to mix WSS correctly was high; more than 70 percent of all mothers knew the exact formula. Other behaviors were also changed by the campaign.

- Feeding of children during and after episodes of diarrhea improved, and activities for personal hygiene and compound sanitation were increased.

The evaluation design included a number of different studies with different methodologies. The largest study collected survey data from repeated visits to a panel of roughly 1000 mothers selected from 20 communities. Examples of other study approaches include anthropometric measurement, behavioral observations, community mortality, health professional interviews, and a process evaluation. This report, one of a series about the evaluation's findings, presents the results of a process evaluation.

The purpose of a process evaluation is to examine the major activities and events in the life of a project, looking for lessons and insights that are useful for planners of similar activities. The objective is to seek generalizable or representative events to make the "wisdom" acquired from experience available to a broader group. A process evaluation is not a review of the quality of the implementation of the project at hand; while some difficulties will be mentioned in the report, they are mentioned because they often provide some of the richest learning experiences.

- The process evaluation takes up a series of issues or activities, describes some of the circumstances encountered in that context in The Gambia, and tries to draw out general lessons from the experience. The issue or activities considered in this report are:

- General project goals and strategy
- Diarrheal disease control policy
- Project structure
- Developmental investigations and formative evaluation
- Health worker training
- Radio production
- Graphics production
- The "Happy Baby" Lottery
- Institutionalization

A few of the salient lessons are summarized here.

The project benefited a great deal first from adopting a methodology that led to clearcut objectives, and later from having achieved consensus on a narrow but very important set of objectives. The use of systematic, empirical processes for selecting and defining messages, testing the ideas and products on the audience, and carrying out formative evaluation on the resulting messages required the project to be self-disciplined, but repaid it handsomely for the effort. The use of behavioral analysis and techniques of instructional system design enabled the project to develop an integrated multi-channel approach in which messages arriving through different channels

were complementary and reinforcing.

The autonomy of the project office in terms of responsibility and budget made it possible for it to perform very effectively. The fact that the project itself was "responsible" for only a narrow set of objectives enabled them to focus their energies in a very intense way. The freedom provided by access to donor agency funding without going through governmental channels permitted a responsiveness that would have been very hard to duplicate within the bureaucratic structure.

Dedicated and highly motivated counterparts within the Gambian government institutions played important roles in ensuring the project's success. High turnover and transfer rates, plus many competing demands from the understaffed Ministry probably reduced the full impact that might have been attained; however, it did have the advantage of disseminating the project concept quickly into other government offices.

The specific techniques of developmental investigations and formative evaluation results helped sharpen the focus and produce effective messages. Without the information gained in the early "fact finding" developmental investigations, efficient planning could not have been done. The project would have been at risk of misdirecting its effort. The project borrowed research techniques from both survey research and market research. The research was fundamentally exploratory, so small samples and flexible protocols were appropriate to the task.

The field staff of the Ministry of Health played a decisive role. Their contributions were critical to the project. Their cooperation was sought through early and complete involvement in the planning process, plus additional training. The "investments" in time and energy required to involve them in the process were richly rewarded by the commitment they later displayed. The use of community volunteers required still greater efforts, but also paid off in the long run.

The constraints of linguistic diversity and low written and pictorial literacy levels presented special challenges. One result was the coordinated use of channels, for example, radio and health workers were used to support pictorial materials. The pictorial materials were extensively pretested to avoid problems caused by lack of familiarity with graphic conventions. The Happy Baby Lottery provides a particularly good example of this type of coordination.

Institutionalization of the methodology used in the project was one of the major objectives. The final project activity - a mini-campaign on water and sanitation - provided an opportunity for project counterparts to participate in all aspects of the process. The institutionalization process has created a group of Gambian civil servants who are knowledgeable and enthusiastic about the methodology. Resource constraints and competing priorities still inhibit large-scale implementation of the methodology. However, the groundwork has been laid for long-term adoption of the project's approach.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
I. INTRODUCTION	6
II. GENERAL PROJECT GOALS AND STRATEGIES	10
A. Message Selection and Design	10
B. Product Testing	11
C. Message Pre-testing	12
D. Overall Instructional Program Design	12
E. Management of Media Production and Distribution	13
F. Monitoring and Modification of Program Components	13
G. Summary	14
III. DIARRHEAL DISEASE-CONTROL POLICY IN THE GAMBIA	15
IV. PROJECT STRUCTURE: STAFF AND RESOURCES	17
V. DEVELOPMENTAL RESEARCH AND FORMATIVE EVALUATION	20
A. Pre-testing Materials	20
B. Developmental Investigations in November 1981 and December 1983	22
C. Formative Evaluations	24
D. Conclusion	28
VI. HEALTH WORKER TRAINING	30
A. Training Workshops April to June 1982	30
B. Red Flag Volunteers	33
C. Additional Training	35
VII. RADIO PRODUCTION	37
VIII. GRAPHICS PRODUCTION	41
IX. THE HAPPY BABY LOTTERY	46
X. INSTITUTIONALIZATION	53
A. Mini-campaign	53
B. Evidence of Methodology Transfer	54
XI. SUMMARY	58
APPENDIX A: Summary of the Major Findings of the Impact Evaluation	61

1. INTRODUCTION

This document is a report of the findings of the process evaluation of the USAID-funded Mass Media and Health Practices Project (MMHP) in The Gambia. The project used an innovative methodology drawn heavily from social marketing to promote health behavior change. The key components in the methodology were: village-level research on practices, cultural concepts and vocabulary for planning and message development; behavioral analysis for defining desired behaviors and planning paths for arriving at them; and use of a highly integrated multi-channel communication strategy that used each channel to its best advantage and to reinforce the messages carried in the other channels.

The Agency for International Development and the Department of Medical and Health of the Gambian Ministry of Health, Labour and Social Welfare initiated this project to test a methodology for influencing a large number of mothers to adopt the new behaviors, perform them repeatedly, accurately, and effectively, and ultimately to reduce mortality from diarrheal dehydration.

The Agency for International Development (AID) established the Mass Media and Health Practices Program in 1978 to implement and evaluate programs with these objectives. The program was structured to run related projects in two countries in order to learn more about the way the methodology operates in different cultural and environmental contexts. Agreements with the governments of Honduras and The Gambia permitted the program to cooperate with each Ministry of Health in introducing the methodology in support of the country's diarrheal disease programs. The original plans for two sites have since been amended to include several others. This report concerns only the evaluation of the project in The Gambia.

The Academy for Educational Development (AED) in Washington, D.C. worked with the Department of Medical and Health to design and implement the program.

The evaluation was carried out by the Institute for Communication Research and the Food Research Institute of Stanford University, and their subcontractor, Applied Communication Technology. Communication Technology. The implementation and the evaluation are funded by the Office of Education and the Office of Health, Bureau of Science and Technology, United States Agency for International Development. The USAID Mission in The Gambia and the Ministry of Health contributed additional resources for many project-related activities.

The project being evaluated, known in The Gambia as the Mass Media for Infant Health Project, used radio broadcasts, interpersonal communication, and print materials to teach mothers about infant diarrhea and to motivate them to change related behaviors. One prime behavioral target was the adoption of a home-mixed water-sugar-salt (WSS) oral rehydration solution as a treatment during diarrhea. Oral rehydration solution reduces the risk of death from dehydration by replacing the water and electrolytes lost during diarrhea. Two other targets were change in the feeding of children with diarrhea and change in sanitary practices.

In the MMHP Project, the messages focused on health, but the potential exists for broader applications, whether in other development sectors or in other areas of the world, or both. Thus, a "process evaluation" was undertaken from the very beginning. This process evaluation serves to draw broad lessons from the principal activities of a project and should allow others who are trying to accomplish similar objectives to benefit from The Gambia's experience. This process evaluation deals with the MMHP project in The Gambia, West Africa. (A similar evaluation of the other MMHP site, Honduras, Central America, has also been conducted.)

The MMHP educational methodology, based on prior experiences in using

communication tools for development, incorporated three main teaching channels in an integrated fashion. The channels were health workers trained to provide face-to-face instruction for rural people, radio messages, and printed materials. The integration was accomplished at several levels, including integration of message content across channels, integration of channels across events, such as the lottery that will be described later, and integration of project objectives with national health policy.

The health-related results intended in the MMHP project were: (1) universal access to the teaching channels and attention to campaign messages; (2) improved knowledge among the target audience (rural mothers) of what was taught; (3) increased practice by the audience of what was learned; and (4) improvements in the health status of target audience's children aged 0-5 years. The project's evaluation group has monitored all these desired results, and reports them elsewhere.* A summary of the major findings is incorporated as Appendix A.

"What was taught" was how to prevent dehydration in small children who had diarrhea. An oral rehydration solution using a homemade mix of water, sugar, and salt was the constant theme promoted by each of the three teaching channels. Around this theme, other points of oral rehydration therapy were added and blended -- e.g. the proper feeding of a child with diarrhea, the continuation of breastfeeding during diarrhea, the proper time to take a child with diarrhea to the clinic, and some ways to prevent diarrhea in the first place.

* (Foote, et al..) The Mass Media and Health Practices Evaluation in The Gambia: A Report of the Major Findings. Applied Communication Technology, Menlo Park, Ca. 1985.)

in this report, we review the following features of the MMHP project in The Gambia:

- General project goals and strategy
- Diarrheal disease control policy in The Gambia
- Project structure
- Developmental investigations and formative evaluation
- Health-worker training
- Radio production
- Graphics production
- The Happy Baby Lottery
- Institutionalization
- General project goals and strategy

11. GENERAL PROJECT GOALS AND STRATEGIES

The design of a process is its most formative feature. One must ask, did the design process flow from a well-conceived set of goals, according to a well-advised set of strategies? We ask this not to evaluate the implementor's compliance but to assess the sturdiness of the original methods and the clarity of the original design.

The original planning document (USAID's Project Paper) cites six elements which the implementors were to use in carrying out the project. These were: (1) message selection and design, (2) product testing, (3) message pre-testing, (4) overall instructional program design, (5) the management of media production and distribution, and (6) the monitoring and modification of program components. "It is the orchestration of these six elements," says the Project Paper, "into a comprehensive, simplified methodology which is at the heart of the implementation contractor's task in this project and which is central as well to the replication of this project elsewhere."

Let us briefly describe how each of these elements was incorporated into the project implementation. They will all be treated in more detail in later sections of this report; the important point here is to note that they all were central, enduring elements in the project methodology.

A. Message Selection and Design

Message selection and design was a long, systematic process that called on people skilled in behavioral psychology, social marketing, educational technology, radio production, public health, and diarrhea! disease, including physicians in residence in rural Gambia. Discussions began in the United States and continued in The Gambia, with many of the discussants going out to the field to clarify the few specific messages that would form the heart of

the project's teaching. Well over a hundred possible messages were generated by the freeflowing early sessions; these messages were then sifted until a disarmingly few, manageable messages remained. Choices were made according to both quantitative rating scales on such factors as salience and compatibility with existing practices, and the qualitative consensus of all the experts.

In retrospect, the process of message selection and design may appear rather tortuous. But it was immensely useful. The focus it provided and the second-guessing it avoided later recommends it to other projects, whatever their nature. Looking at the modest list of messages that the project chose to teach, an observer might be lulled into thinking that message selection and design took only a little time from only one or two people. Though the process was far from brief and the messages were anything but glib, the clarity and consensus that the process achieved made for steadiness throughout the project's course.

B. Product Testing

Product testing, the second element in the methodology, was done for the home mix solution and for the official Diarrhea Manual. Possible solutions were tested in a series of mixing trials in a number of rural villages, using audio cassettes to teach village women to mix the water-sugar-salt (WSS) solution. In the first of these trials, the use of lemons or limes in the solution was eliminated, because lemons and limes are not available throughout The Gambia all year, and many women, feeling that they lacked a necessary ingredient, would not mix the solution at all without lemons or limes.

The other "product" tested was the government's Diarrhea Manual, a set of guidelines written by the National Diarrheal Disease Control Committee within the Medical and Health Department. This manual later formed the basis of

health-worker training sessions throughout the country; it was pre-tested, therefore, among a subset of rural health workers. While generally well received and well perceived by the health workers, the manual was improved in several critical areas by being pre-tested. In addition, the subsequent training courses were able to give emphasis to areas of the manual that posed difficulties during the pre-test.

C. Message Pre-testing

Message pre-testing was done partly through the mixing trials and partly through focus groups. In the focus groups, about eight to ten women would describe their own understanding and practice relating to childcare in general and infant diarrhea in particular. Project staff participating in these groups would introduce project messages to the discussants, listening for feedback on the substance of the message as well as the particular Mandinka or Wolof words used to convey the message. In this way, the precise terms for diarrhea, dysentery, and dehydration were identified and standardized in project messages. The focus groups also revealed some positive existing practices vis-a-vis diarrhea -- e.g., breastfeeding during diarrhea, giving herbal teas to children with diarrhea, and the absence of purging. The project messages were able to reinforce these positive elements.

D. Overall Instructional Program Design

Overall instructional program design called for reinforcing and overlapping messages from the three teaching channels -- face-to-face teaching by health workers, radio, and graphics. Based on communication theory, the same message coming from different media (such as health workers and radio) takes on a different character depending upon the source. Accordingly, the

heavy use of radio to promote mixing and feeding messages carried the ubiquity, and legitimacy and prestige of the radio medium, while the same messages coming face-to-face to a mother from a health worker at a clinic carried the credibility and authority of the health worker. So the radio and health workers can complement and reinforce each other.

Graphics provided an interesting addition to the media mix. Preliminary studies found a very low literacy rate among village women -- 3% -- which might have ruled out using graphics. But by concentrating on pictures rather than words, by explaining those pictures repeatedly through the radio and the health workers, and by linking those pictures to the prize structure of the Happy Baby Lottery, the graphics components of the integrated media mix more than justified themselves.

E. Management of Media Production and Distribution

The management of media production and distribution was the fifth element in the mandated methodology. Coordination of project media was maintained through regular liaison with the rural broadcasting staff at Radio Gambia, through the actual production of radio scripts, through pre-testing and teaching the Diarrhea Manual to health workers, and through the development of project graphics through all their stages, including distribution throughout the country.

F. Monitoring and Modification of Program Components

Finally, monitoring and modification of program components was the role of the periodic formative evaluations. Adjustments in emphasis and messages resulted from the monitoring. In particular, the greater stress on feeding during diarrhea in the project's second year was a direct result of formative

evaluation. Radio Gambia's lack of direct coverage in the far eastern sector of the country also uncovered informative evaluation, which led to the sending of tapes to a repeater station to promote the Happy Baby Lottery.

G. Summary

Thus, each of these six elements was well conceived and together they gave the project a structure it could build on. The mandate received by the implementors was clear -- a point not to be underestimated.

III. DIARRHEAL DISEASE-CONTROL POLICY IN THE GAMBIA

Before the project team arrived in The Gambia, the National Diarrheal Diseases Control Committee had been working on the Diarrhea Manual, to standardize The Gambia's policy on diarrhea. Water-sugar-salt solution had previously been publicized in rural Gambia, so much so that over half the women queried by the project's evaluation team, before the implementors began their teaching, had heard about WSS solution. Despite the high awareness, there was virtually no accurate knowledge. These 415 women, when asked what formula for WSS they used, described 198 different formulas! Some were heavy on salt, some were approximately in the proper proportions, most were vague confections involving such metrics as "a pinch", "a little", "a glassful", a "handful," and so forth. Standardization was obviously needed, and this is precisely what the committee provided in the Diarrhea Manual.

The Manual specified: what kind of treatment should be done at home (the WSS solution); the WSS mixing formula (8 bottlecaps of sugar, 1 bottlecap of salt; 3 Julpearl bottles of the cleanest water available); when the WSS solution should be given (at the first sign of diarrhea); when to take a child to a clinic (after three days, or at the first sign of dehydration); and how health workers should manage diarrheal dehydration in the clinic, depending on its severity.

Initially, the Diarrhea Manual was formulated as the text for World Health Organization (WHO) sponsored training of rural health workers. Medical and Health officials did not foresee at that time that MMHP project staff would do that training. All the relevant medical expertise in The Gambia had participated in the preparation of this standardized policy. The British Medical Research Council, whose diarrhea research in The Gambia and elsewhere in West Africa formed the base on which clinical workers approached infant

diarrhea, had three staff physicians on the committee. The chief pediatrician at the Royal Victoria Hospital, the Medical Officer for Health, the chief trainer for Primary Health Care, the resident WHO representative, and the Assistant Director of Medical Services were also on this committee, so that the resulting consensus represented the distillation of all health-care providers' views into a simple set of guidelines, and it came with the full commitment of the Medical and Health Department, the government's medical service.

This achievement by the Gambia Government provided the project with a solid base and a clear mandate. As a result, the project team could come to The Gambia and work on a clear-cut agenda. It was not up to the project team to impose any diarrheal policy of its own or to try to push the government into doing so. Although the Gambia Government does not possess adequate financial resources of its own, its ability in this instance to state policy for itself enabled it to utilize the aid represented by the MMH project quite effectively. Had a clear policy not existed, much time might have been expended in working up to such a point of consensus.

What this experience in The Gambia can demonstrate to other countries is the necessity to have a clearly defined series of desired results, and a model for how consensus on those results might be reached. A "results orientation" gives any project direction. By stating explicitly what results are desired, a results orientation allows project staff to know where they are going and how far they still must go to get there. The clear-cut policy guidelines provided by the Diarrhea Manual are a lesson to future projects of this or any other nature.

IV. PROJECT STRUCTURE: STAFF AND RESOURCES

The implementation staff of the MMHP project fit under the Health Education Unit of the Medical and Health Department. The Health Education Unit was assigned several health inspectors, some in Banjul and some still in training courses elsewhere. By the time the project finished, however, the Unit had three health inspectors with at least a year's training at the African Public Health Education Center at the University of Ibadan, in Nigeria, as well as a British Health Education Officer funded by the British Overseas Development Agency. The Health Education Unit did not have a regular line-item budget; while the Department had proposed money for the Unit in each of the last three years, the Ministry of Finance eliminated the funds each time.* So the Unit had very few resources and the MMHP project was a bit like a tail wagging the dog -- it had many more resources and a broader scope of work than the office in which it worked.

To a great degree, the MMHP implementation staff enjoyed remarkable autonomy, particularly in the financial area. The implementation director in The Gambia had full control over project funds, and could make most expenditures without prior approval from the home office in Washington. Financial resources were both ample and flexible. Neither of these structural elements could have been provided by the Gambian Government, with its limited resources and intricate accounting procedures. Similarly, the project vehicle and petrol supply gave the implementation team mobility and flexibility.

The Health Education Unit's staff was the MMHP project's counterparts,

* And as the project neared completion, substantial funding was being negotiated for the entire Medical and Health Department with the British office of the multilateral project called Combatting Communicable Childhood Diseases. When received, the money would provide solid material support to the Health Education Unit for three years.

and it was precisely the further training of the Unit in the project's educational methodology that the Director of Medical Services requested as the principal effort of the project's final year. The Unit had a dedicated and well trained staff, though with little experience in the kind of educational campaign methodology used by the MMHP project and few resources. Project efforts to impart its methodology will be discussed in the section on institutionalization.

Project counterparts changed over the course of the campaign. One full-time counterpart, a health inspector in the Health Education Unit, was assigned to the project from the very beginning. She participated fully in the developmental investigation, the health worker training session, the production of the first year's graphics, and the Happy Baby Lottery. In January 1983, this health inspector was sent to England to study nutrition at the Ross Institute for the London School of Tropical Medicine, and on her return in October 1983 she was transferred from the Health Education Unit to the Nutrition Unit. She maintained close contact with the project's ongoing activities, however, but was no longer a full-time collaborator and learner.

When the first counterpart went abroad, the Medical and Health Department indicated that the one Gambian health inspector who was in the Health Education Unit would become the project's counterpart. Three health inspectors were assigned to the Unit, but at this point two of the three were still studying in Nigeria. The new counterpart was also the director of the HEU, responsible for all the other activities of the Unit, and had another formal counterpart, the British Health Education Officer provided by the ODA.

With this shortage of counterpart time, the project had to "borrow" health inspectors for a few weeks at a time. During the February 1983 formative evaluation, for example, an inspector from the Environmental Health

Unit was loaned to the project for three weeks to help with interviewing and tabulations.

In mid-1983, the second year of the campaign began, and one of the Health Education Unit's health inspectors returned from Nigeria and involved himself in project activities full time. A few months later, the other one came back as well -- though this man had accrued considerable leave time and went on leave immediately upon his return, removing him as a resource until March 1984.

The shifting of HEU staff working with MMHP gave several people intimate exposure to the project's methodology, but was unfortunate in another respect. No one Gambian was trained in the methodology from start to finish, which may impinge on future efforts by Gambians to design a complete campaign.

While the MMHP project fell under the Health Education Unit, close working relationships were established with Radio Gambia and the Book Production Unit of the Ministry of Education. Coordination with these other institutions will be discussed later as well.

V. DEVELOPMENTAL RESEARCH AND FORMATIVE EVALUATION

Flowing directly from a "results orientation" is a willingness to make methods relative. If methods are relative, then regular monitoring of results allows for regular re-evaluation of methods. Such monitoring was a feature of the MMHP project.

With one eye set firmly on the results to be achieved, project staff were willing to adjust or change their methods entirely. The project began with methods that seemed advisable and were based on the wisdom, experience, and judgement of knowledgeable people in the fields of development communication and diarrheal research, but project staff were always in a learning mode, committed to no one method as the method.

A. Pre-testing Materials

To sharpen project messages, they were tested for message comprehensibility and appropriateness with a sample of the target audience.

To illustrate the types of lessons learned from pre-testing material for health staff use, we list some of the key issues the implementation team uncovered in test of the Diarrhea Manual in November 1981:

- The general reaction to the manual was favorable and enthusiastic. In particular, the health workers found the illustrations realistic and appealing, and looked forward to receiving the manual in its final form. Most of those interviewed said they found both illustrations and text clear and simple to understand.
- More than half of those interviewed, especially those with less training, had difficulty with questions about volumes of rehydration

fluid. For example, answers to a question about how much a Julpearl bottle holds ranged from 300 mls (the correct answer) to 11 mls., 8 ozs., and even 5 mgs.! These answers were received, despite the fact that the respondent was reading the page even as he or she answered. The AED team ascribed this confusion to inexperience with mls. as a measure; most of the beakers observed in health centers were graduated not in mls. but in fluid ozs.

- Several of the health staff had surprising problems in identifying objects in certain of the illustrations. For example, bottle caps were mistaken as basins of food in one instance and as cubes of sugar in another, despite very clear labelling.
- Several persons pointed out that they lacked the necessary equipment or ingredients at their facility to carry out the full Treatment Plans specified in the Manual. For example, few of the facilities had more than a few packets of WHO rehydration solution and only one had all the necessary ingredients to make its own WHO solution.
- The Manual should be distributed and thoroughly discussed at in-service training sessions on management of diarrhea, to overcome many of the interpretive problems listed above.
- Several posters (e.g., summarizing the Treatment Plans, showing the signs of dehydration) should be developed to accompany the manual for placement on the walls of health facilities as reminders and reinforcements for health staff.

The project also conducted regular pre-testings of graphic materials. While any graphic can be open to different interpretations from different

observers, the role of pre-testing was to eliminate pictorial elements that produced the more divergent interpretations and leave the standardization of interpretations to the radio messages and the health workers.

B. Developmental Investigations in November 1981 and December 1983

Equally informative was the developmental investigation, also in November 1981, into appropriate educational messages and materials for mothers on the prevention and treatment of infant diarrhea. Developmental investigation is research carried out to guide program planning. This investigation used the focus group technique, discussing child-health matters with small groups of women. The implementation team steered the discussion through many pertinent topics, including:

- the terms used to describe diarrhea;
- the perceived importance of diarrhea;
- the perceived causes of diarrhea;
- the treatments for diarrhea;
- knowledge of the WSS solution in terms of both mixing and administration;
- availability of ingredients necessary to make the WSS solution; and
- criteria for effective diarrhea medicine.

Feeding and childcare practices were also discussed including breastfeeding, giving of colostrum, weaning times and weaning foods, alternate child caretakers when mothers were working in the fields or elsewhere, personal hygiene, and compound sanitation.

A certain nucleus of childcare practices and traditional diarrhea management was identified from these focus groups. The implementation team could then proceed in the development of their messages with greater confidence and a feeling that their original level of information had been greatly expanded by these systematic, personal meetings with village women.

As a result of the research, the first year of the campaign was characterized by four message themes: (1) the dangers of diarrhea, because diarrhea could lead to dehydration and dehydration could lead to death; (2) the diet for diarrhea -- solids, breastfeeding, and WSS solution -- with most of the emphasis on the mixing and administration of the WSS solution, particularly during the Happy Baby Lottery in August, September, and October 1982; (3) some preventive messages, particularly awareness of feces as a source of diarrheal disease and the need to clean up feces from the compound; and (4) specific messages on dry-season diarrhea, stressing the need for immediate oral rehydration therapy with the WSS solution.

A second developmental investigation was carried out prior to the "mini-campaign," in December 1983. The mini-campaign was the final phase of the implementation and was meant to be the chief training tool for institutionalizing the methodology. This campaign was shorter than the principal diarrhea and feeding campaigns of 1982 and 1983, but incorporated all the methods of those campaigns so that Gambian staff within the Medical and Health Department's Health Education Unit could run through the steps one last time. Water use and environmental sanitation were the themes of the mini-campaign, so a preliminary questionnaire for mothers was designed to get at present practice in these areas. The focus groups used in the prior developmental investigation gave way to individual questionnaires because focus groups tended to be dominated by one or two senior women. In Gambian

village culture, the prominent people, whether by age or sex or position, speak for the group; less prominent people are expected to concur, no matter what their own views may be. Village culture maintains this communal feature, so to get at individual views the privacy and anonymity of a questionnaire was far superior to the public nature of focus groups.

On the basis of developmental investigation questionnaires, mini-campaign topics were narrowed to hand-washing, well protection, and some special support programs for the Village Development Committees supervising the growing primary health care programs in many villages. As with the previous developmental investigation in 1981, the information from this research confirmed some of the implementor's prior notions and forced them to dispense with others.

Developmental investigations cost time and money, can be wearing because they take researchers to far-flung villages, and call for an original acknowledgement by the researchers of their need to learn. However, only a well developed program can achieve results consistently. It may be that for an expatriate this acknowledgement is considerably easier to make, since as a foreigner he can make no claim to insights about village life. A national working within his own country's ministry may need more convincing about the value of developmental investigation, feeling that as a national he is well suited to design messages for villagers. We will talk about how to overcome this hesitation in the section on institutionalization.

C. Formative Evaluations

Formative evaluations are small-scale research efforts, performed in order to get quick feedback about project success. The intent is to get information on which to base management decisions, so that changes can be made

in the way the project is working. They should not be confused with the summation evaluation performed by the external evaluator. In the case of formative evaluations, the objective is to get a quick, rough understanding of the main results. With summative evaluation, the objective is to get an accurate estimate of the size of the impact, and a thorough in-depth look at the results. The two processes require different research approaches.

Formative evaluation on the main diarrhea and feeding campaigns was done in February and October 1983 respectively. The first sought to assess the project's effectiveness, specifically in the treatment and prevention of diarrhea, on rural mothers, government health workers, and the Red Flag Volunteers (community members whom the health staff had trained after their own training by project staff). Research consisted of individual interviews with 148 individual women and focus groups involving 39 others plus interviews with 14 rural health staff and 20 Red Flag Volunteers. *

Findings indicated that the messages about WSS solution had created widespread awareness of oral rehydration therapy, and that awareness had led to substantial increases in knowledge about WSS solution and actual use of the solution for children with diarrhea. To the degree that village women liked the WSS solution, they attributed it to the solution's perceived ability to stop diarrhea. Very few could articulate the idea of preventing dehydration that the project had emphasized. Stopping diarrhea, of course, is not something that the WSS solution does, still less something that the project promised the solution would do. Evidently the diarrhea had stopped coincidentally in most cases, so that WSS solution had gained a reputation as

* Academy for Educational Development, Summary of February 1983 Formative Evaluation, Mass Media for Infant Health Project, The Gambia, Banjul, March 1983.

a "cure" for diarrhea, rather than avoiding the dehydration that when prevented was not particularly salient.

Does this mean that these mothers are not motivated by a prevention measure, and that they respond only to curative measures that heal a sick child? We think not. In The Gambia, the government's Expanded Program for Immunizations has met with overwhelming acceptance; the nine injections that make up the full series of immunizations are entirely prevention measures.

It probably means that messages must be very strong and insistent to overcome the hurdles of: (1) introducing an entirely new concept; (2) teaching mothers to differentiate between the new concept and the existing one; (3) establishing the counterintuitive notion that even though ORS often appears to "cure" diarrhea, it does not; and (4) convincing mothers to give early treatment with ORS in order to avoid dehydration, a problem they didn't know they had.

The formative research also showed that breastfeeding during diarrhea, a practice which had always been high in The Gambia, remained high. The use of the WSS solution rose considerably, as did correct knowledge of its mixing and administration. But the third part of the "diet for diarrhea", feeding solid foods during diarrhea, showed only a small gain, in no way comparable to the increase in use of WSS solution. Feeding practices are very important during rainy season diarrhea in The Gambia.

These results were then incorporated into the campaign for the next rainy season: much greater emphasis was placed on feeding a sick child. The 1983 rainy season campaign continued to promote WSS solution as a fluids-replacement measure and breastfeeding as a vital component of infant nutrition. The feeding messages were modified and made the primary focus of that campaign, as oral rehydration had been during the first year's campaign.

Feeling that the message "give solid foods during diarrhea" may have been too difficult for mothers to carry out -- given a sick child's lack of appetite and all the constraints on good nutrition during the "hungry" or rainy season -- the implementation team revised their feeding advice. They acknowledged the difficulty a mother may have in feeding her sick child and gave several practical suggestions for encouraging the child to eat something. These included giving small, frequent feeds and adding sugar or milk to the pap the mother is most likely giving to improve its flavor and increase its energy value. Solid foods were then encouraged as an important and appropriate "catch up diet" once the child is getting better and recovering his or her appetite.*

Two other areas for improvement emerged from this formative evaluation. More stress appeared to be necessary on the message that a mother should take her child to the health center if the WSS solution had not brought about a notable change in the child after three days. Some health workers were using the WSS solution as a treatment for dehydration, rather than as a prevention for dehydration. Moderate or severe dehydration should be treated in the health station using complete-formula oral or intravenous solutions. According to the Diarrhea Manual, the precise role of the WSS solution is to prevent dehydration and is to be used in the home. Once dehydration occurs, the use of WSS is not recommended.

So the February 1983 formative evaluation gave reinforcement to some aspects of the implementation team's messages and called for revision of others. These revisions were done.

* Academy for Educational Development Field Notes, p. 3, 1983

At the end of the second rainy season, in October 1983, a second formative evaluation was done to assess the just-completed feeding campaign.* The women interviewed showed a gratifying awareness of the solid foods promoted by the campaign, and understood that these foods were "best for a child when he has diarrhea." Paps, which the original developmental investigation had shown to be the food of choice for children with diarrhea, were now mentioned relatively little. The adjustments indicated as needed by the February study seemed to make a notable difference in the October findings.

These findings became the basis for across-the-board reinforcement, during the final months of the project, of the campaign's key messages clusters: how to mix and administer the WSS solution and how to feed a child during and after a bout of diarrhea, and re-emphasis on the rationale behind oral rehydration, the replacement of fluids and the prevention of dehydration.

D. Conclusion

The developmental investigations, formative evaluations, and pre-testing represent features not usually incorporated into development projects. As just described, however, they are invaluable in pointing out both weakness and strengths of original and revised plans. Without these features, campaign results can be discussed only on the basis of anecdote and inference; there is no valid information about what actually happened. Without these features, adjustments could not be made with any confidence; the project would hew to its original methods blindly or would make adjustments only on the basis of

* Academy for Educational Development Summary of October 1983 Formative Evaluation, Banjul, The Gambia: Mass Media for Infant Health Project. 1983

anecdote and inference. Without these features, the project would have a process orientation, as opposed to a results orientation. That is, the project would assume that certain processes or methods would lead to certain results, but the link between those methods and those results would be merely an assumption. The results orientation goes beyond that assumption, with its focus on goals, willingness to change methods, and incorporation of ways to monitor progress toward the goals.

VI. HEALTH WORKER TRAINING

In a recent interview, the implementation director remarked, "One thing that I continue to see as a very positive feature is how far a seemingly small effort with health workers can go ... People do go back from the training sessions and especially when we've given them some materials to work with, they really go out and do it."

The Gambia has an extensive health outreach system. Granted, the country is small, but the level of effort exceeds that in many countries of greater resources. The government's policies on health care seek to stress primary health care and prevention, then provide secondary backing in fixed health facilities through the country, and finally maintain two hospitals at either end of the country. Primary health care is being introduced gradually, nationwide; about 40% of the country had been covered by the end of 1983. The rural health staff, working out of the fixed health facilities, provides both curative and preventive care both at clinics and in mobile trekking teams that visit outstations weekly or fortnightly.

The MMHP project staff was anxious to include health worker training among their tasks, because of the importance of integrating the campaign's different channels. Lessons from earlier development communication efforts had demonstrated the limited effects of mass-media use alone; and where mass media had produced effects on their own, those effects were longer in coming. The rationale behind the MMHP strategy was that experience called for an integrated approach: radio, health worker training, and graphics.

A. Training Workshops April to June 1982

The core of the MMHP project training effort, in the first year, was a series of six five-day workshops during April-June 1982 for mixed groups of

Health Inspectors, Community Health Nurses, Dresser Dispensers, and Nurse Midwives. These sessions were planned to include all community health nurses in the country and all health inspectors in rural areas, as the two cadres most mobile and involved in health education, as well as the key curative personnel from each health center -- the dresser dispensers and nurse midwives. Members of each of these four cadres were included in each training session to encourage a team approach to the problems addressed. The Medical Officer for Health suggested that the groups be integrated during training rather than have separate sessions for various categories of health staff. This proved to be wise advice, as each cadre saw how they fit in to the big picture of the diarrhea campaign. In addition to these five-day workshops, a shorter session was conducted for Leprosy Inspectors, another group chosen for its wide coverage of isolated villages.

By the time project radio broadcasts began on May 1, 1982, the all rural health staff had been trained by or invited to training. They were made to realize from the start that the campaign was an integrated effort, that they were a vital part of it, and they were able to identify and draw prestige and legitimacy from the radio messages. When villagers heard the radio programs about WSS solution and asked their health staff about them, the health workers could say, "yes, we are a part of that. WSS is a good thing. You can be confident to use it for your child."

The health staff never showed feelings of being upstaged by the media component of the project. Although experienced development communicators concur that media must be combined with face-to-face teaching through extension workers, extension workers in developing countries might very well fear that the mass media approach would replace them rather than reinforce them; indeed, in the early days of development communication, this is what

some communicators thought. In The Gambia, the implementation staff headed off any such fears among the health staff by clarifying the integrated strategy right from the beginning. The result was full-hearted collaboration from the health staff, a feeling of involvement in something important and a feeling that their part in the diarrhea campaign was central -- as indeed it was. Evaluation data has consistently showed that health workers were a main source of learning about how to mix the WSS solution.

The training session imparted both learning and professional camaraderie. The curriculum derived directly from the Diarrhea Manual, providing three days of the five day seminar. Trainees learned how to mix the solution, how to administer the solution, how to teach mixing and administration, how to deal with various stages of dehydration, and how to advise mothers about feeding a sick child. The rural health staff responded with enthusiasm to the training. Attendance was remarkably high -- the health workers seem genuinely appreciative of a chance to undergo further training and to be a part of the new campaign.

Had the rural health staff not been included in training, the possibility of passive resistance as well as the loss of their unique contributions would certainly have hindered the project in critical ways. As in most places, in The Gambia officials of any kind react negatively if they are bypassed in matters relating to their clientele, but when they are included, supported and given extra prestige, their feelings of adequacy and involvement blossom into major benefits for the project's desired results. We want to belabor this point, because what was done in The Gambia vis-a-vis health workers offers a lot of lessons about what to do elsewhere. This was not simply good public relations; it was the heart and soul of the project's substance. Utilizing the health workers so well and especially instilling so much enthusiasm within

them was at least as important as the radio production or any other aspect of the project.

Training sessions benefitted from the behavioral psychologist's advice. Objectives of the training were behavioral, and each trainee was given lots of chances to practice what he or she was learning. This behavioral orientation was structured to give the health staff fluency in the mixing process. The training staff would mix the solution, making little errors that the trainees could catch and correct. Another useful gimmick was to have competitions between teams of health workers -- to mix the WSS solution quickly and correctly -- with the winners receiving little prizes like chewing gum. It was silly, but fun and behavioral, really motivated the participants, and created further camaraderie among them.

The project used only three days to complete its teaching about the WSS solution and other campaign matters. During the other two days of each five-day seminar, other units from Medical and Health provided their training to the assembly of health workers, who were supported by the project for the entire five days. This represented a significant and particularly well-received in kind contribution to the Medical and Health Department, building up the project's image as a serious and integral part of the Department's outreach efforts.

B. Red Flag Volunteers

A principal objective of the training was to have participants train other people to mix the WSS solution. The new cadre of Red Flag Volunteers, trained in turn by newly trained health staff, then became local resource persons for their areas or villages. Each health inspector or community health nurse (about 85 people) trained by the project was supposed to select

ten volunteers from ten different villages near his or her station. These volunteers were to be given a red Happy Baby flag to mark their compounds. Women would then be told over the radio that the compound with the red flag was the place to go to learn how to mix the WSS solution; or to remind themselves to mix it right when their child was sick with diarrhea. Red Flag Volunteers were also to be provided with the Diet for Diarrhea poster.

The idea behind the Red Flag Volunteer was to multiply the effect of the health worker training, at least in terms of providing instructors to village women to mix the WSS solution at home. The visibility and prestige that went along with the red flag, not to mention the reinforcement over the radio, made the job highly coveted in some instances. The position would sometimes be given to the village chief's wife -- at the insistence of the village chief. Factionalism within some villages made the Red Flag Volunteer a political appointee, sometimes with no real interest in teaching about the WSS solution. Other volunteers became a focal point for village health information, a limited but compassionate teacher for mothers with sick children.

Despite the difficulties of visiting villages on a limited patrol ration and the many other duties of the rural health staff, hundreds of volunteers were trained and carried out their appointed task in many small villages in even the remotest sections of The Gambia. In the February 1983 formative evaluation, the 148 mothers interviewed were asked about Red Flag Volunteers.* Nearly three in four knew about a volunteer in their vicinity, but only three in ten had ever visited one for advice. In the Stanford evaluation, 83% of a sample of over 800 women lived in villages with a Red Flag Volunteer, 67% knew the location of a Red Flag Volunteer and about 38% knew where to find a Red

* (AED, 1983 A)

Flag Volunteer and could correctly explain the volunteer's function by October 1982. By February 1983, 63% of all women knew of a volunteer and what her job was.

A small number of interviews with Red Flag Volunteers was done in the formative evaluation. Almost all knew the correct way to mix the WSS solution, and all knew the value of solid foods for children with diarrhea. The poster was well understood, and most of the volunteers knew that the WSS solution was meant to prevent dehydration rather than to stop diarrhea.

The implementation staff has expressed concern about supervision of the Red Flag Volunteers. From the beginning, the plan had never been to create a new cadre of health workers; the volunteers were intended as ad hoc resources during a campaign of limited duration. As the months went on, and especially when the project was extended for an additional year, the status of the Red Flag Volunteers became ever grayer. Some requested compensation, some became confused with the growing ranks of Village Health Workers who were part of the Primary Health Care system (indeed, in some cases, the Red Flag Volunteer was the VHW), some lost touch with the health worker who had trained them.

If only to reduce the confusion that grew up, greater definition might have been given to the role of the Red Flag Volunteers and a definite period of time might have been stated for their service. It is nice to hope that they will serve indefinitely, but without regular supervision and specific guidelines and timelines for their service, the inevitable fuzziness leaves both organizers and volunteers wondering what they have created.

C. Additional Training

One year later, in the summer of 1983, the project offered additional training to the rural health staff, this time emphasizing the feeding messages

that were so prominent during the 1983 rainy season campaign. Enthusiasm remained high, as health workers welcomed both the chance for learning something new and for visiting with so many of their colleagues whom they rarely see from year to year. The exchange of information and experience that occurs during these training sessions constitutes an important outcome of the overall training effort.

Good relations established during training laid the groundwork for further on-site visits with health workers at their stations. They readily cooperated with the project's subsequent ventures -- most particularly the Happy Baby Lottery (described in detail below).

In addition, in the last six months of the project, frequent international visitors to the project were welcomed by the health staff. They earnestly communicated their feeling of involvement in the project and undoubtedly convinced many visitors of the essential need to incorporate the rural health staff in any project elsewhere.

VII. RADIO PRODUCTION

Relationships with Radio Gambia, the national radio station, developed gradually, much as the specificity of the campaign's messages grew over the early months of the implementation staff's presence in The Gambia. In fact, nearly a year of research and planning went by between the arrival of the implementors and the first radio broadcast. But, as was mentioned in the section on developmental investigation, those months were filled with useful, necessary groundwork in defining the message content and campaign strategies.

In fact, Radio Gambia staff members were involved in the early research, accompanying project staff on trek and listening to villagers themselves speaking about health matters and radio-listening habits. Project staff participated in regular meetings at Radio Gambia, particularly the monthly meetings of the Advisory Sub-Committee on Rural and Adult Education Broadcasting. This group included representatives from all the government agencies that contributed to Radio Gambia's nightly program on rural development -- agriculture, fisheries, forestry, small business, health, community development, animal health and production, and cooperatives. All of these contacts allowed the project's radio production to evolve from months of interaction with the staff of the radio station. An abrupt entry and an early need for considerable attention from Radio Gambia would have been impolitic, as well as failing to carry out the truly formative exercise of the developmental investigation.

Actual production of the project's first eighteen programs was carried out in March and April of 1982, catalyzed by a radio production consultant brought in by the implementation team. This radio producer, who would return twice to The Gambia during the project, cemented the project's working relationship with Radio Gambia while making some direct contributions to the

training of the Radio Gambia staff. She completed the planning, scripting, and pre-production of programs focusing on the dangers of diarrhea and the special diet for diarrhea -- nine programs each in Wolof and Mandinka. These programs included eight 3 to 5 minute spots and ten 10 to 12 minute "mini-programs." As a result of the gradual refinement of messages from the developmental investigation discussions with MRC staff and on-site observations, the in-country implementation staff was able to provide the production consultant with a clear set of messages that were to be translated into scripts.

The establishment of a good working relationship with Radio Gambia and the assessment of Radio Gambia's production capacities, also contributed to planning future training inputs for Radio Gambia staff, a radio-production workshop in June 1982 and a scriptwriting and news-reading seminar in February 1984.

The original 18 programs were pre-tested in early April 1982, final production was completed at the end of April, and on May 1 the programs went on the air. In each language, eleven spots were broadcast every week with one mini-program twice a week and a 30-minute magazine program twice a week.

The multi-lingual production process at Radio Gambia is quite different from the standard practice of an American station. While the project's programs were tightly scripted in English, actual broadcasts were in Wolof and Mandinka. The actual scripts would then be freely translated by the announcers or actors into Wolof and Mandinka without ever writing out scripts in these languages. Rather, the on-air people would go over the English scripts for awhile, and when they felt they had the gist of the program, the actual taping began with the actors improvising in the two African languages. The project did insist on certain key phrases in Wolof and Mandinka, referring to specific

campaign matters, but the rest of the phrasing was ad-libbed by the announcers and actors. As such the project productions were no better and no worse than the regular Radio Gambia's programming. What the project's programs did have, however, was a long-range vision; they were part of an integrated campaign and would be complemented by subsequent radio messages and messages from other sources, such as the rural health workers.

Later, scripts were developed during another visit by the production consultant in June 1982, and then scripts were done locally, by the implementation staff. The production of programs involved much more than the writing of scripts. Because Radio Gambia is located outside Banjul, actors could not get there easily and appealed to the project for transport. Tapes had to be provided and studio equipment kept in good repair. Field recording of actual interviews and pre-testing in the field added to the logistical demands on the project. In sum, the project was welcomed and assisted by Radio Gambia, but the lack of local resources necessitated supplementation by project resources and personnel.

To provide long-term institutional support to Radio Gambia, the project participated in a radio-production workshop for station personnel in June 1982. This seminar also contributed a considerable array of broadcasting equipment for the strengthening of Radio Gambia's technical capacity, and offered training to radio producers from all governmental units involved in the preparation of rural development broadcasts. Further training offered by the production consultant on her final trip to The Gambia in February 1984 resulted in a revamping of the rural development programs using new formats and more advanced production techniques.

The need for training is a two-edged sword. Because there is a limited number of people on the Radio Gambia staff, time off by a staff member for

training adds further limitations to the station's capacities. Participation in a series of training opportunities, mostly out of country, has kept the station severely and chronically understaffed, while adding to its long-run capability.

VIII. GRAPHICS PRODUCTION

Some of the earliest contacts made by the implementation team were within the Book Production and Materials Resources Unit of the Ministry of Education. Its Gambian director had put together a most reliable unit, including several Peace Corps volunteers, that became a valuable component of the project. The Book Production staff had the ability to do multi-color printing, graphic design, and photography. When the needs of the project on occasion exceeded the capacities of the Unit, the director made arrangements with the Imprimerie St. Paul in Dakar, Senegal. The Book Production Team met its deadlines and, in the words of its director, welcomed the challenge that the MMHP project represented. The project stimulated the Book Production Unit to do things that the Unit had not done before. They were open to the discipline of pre-testing, willing to re-design their original sketches on the basis of systematic reactions of Gambian villagers.

In addition, use of the Book Production Unit's facilities was on a simple cash basis. It was not necessary to do a lot of paperwork or secure approvals from the Medical and Health directors for each job. Working with the Book Production Unit was consistent and straightforward.

The same could be said for the Imprimerie St. Paul in Dakar, with their greater capability. They too met their deadlines. One cumbersome aspect of dealing with Dakar, apart from the logistics of distance, was the difficulty in paying in CFA. The matter was handled by wiring dollar checks from the U.S., but the process remained cumbersome.

The project produced seven graphics pieces in all:

- the Treatment Poster (600 copies), a complex, multicolored affair designed and printed in the United States. This poster was given to

health workers at the training session, and was intended for their use alone. Its complexity in defining the various treatments for mild, moderate, and severe dehydration in terms of so many milliliters of solution per kilogram per hour made this graphic look very busy. But it was designed as a reference in the clinic, not as an attention-getting visual for public distribution and display.

- the "Diet for Diarrhea" poster (2000 copies), designed by the Book Production Unit, pre-tested and revised in The Gambia, and printed in Dakar. This poster was meant to be an instructional tool for health workers to use in teaching mothers directly. The Diet for Diarrhea poster was posted in the public areas of clinics where women would generally wait for long periods; it was also distributed by the health workers to the Red Flag Volunteers for their use in teaching mothers. This poster was simpler in content, cleaner in design, printed in a shiny yellow that stood out on the darker walls of clinics and homes.
- the "Mixing Flyer" (200,000 copies), designed by project staff and the Book Production Unit, pre-tested widely in The Gambia, and printed both in Banjul (50,000) and Dakar (150,000). This four-color 8 1/2 by 11 inch handout was meant to be distributed to every woman in The Gambia, and was given in bulk to all the health stations and health workers in both private and public service. The Mixing Flyer also served as the "lottery ticket" for the Happy Baby Lottery, a tactic that resulted in remarkable distribution and retention. Printed both front and back with the mixing instructions for the WSS solution, this graphic piece was found in most Gambian houses many months after the Lottery. Over 70% of the summative evaluation sample could show the

interviewer a copy of the flyer by February 1983, 49% of the control sample still had a flyer by June 1983, and 31% of another control group still had a flyer nearly 2 years after the campaign began.

- the Feeding Poster (2000 copies) for health workers, designed and pre-tested in Banjul, printed in Dakar. This poster was used in the second year's training sessions with health workers, just as the Treatment poster and the Diet for Diarrhea poster had been the basis for training in the first year. The Feeding Poster displayed the foods that the project recommended for a child with diarrhea both during and (more so in the campaign's second year) after the diarrhea. Health staff were trained in the use of the poster as a teaching aid, and were instructed to distribute copies to other health workers who had not attended the special training sessions provided by the project.
- the Feeding Flyer (50,000 copies) for mothers, produced entirely in Banjul for the second year's campaign, analogous to the first year's Mixing Flyer in that it was meant for distribution to the public. It recommended special additives for a child's pap during diarrhea (oil, sugar, milk) and solid foods for the child while he or she is recovering from diarrhea. Health workers were to give these flyers to women at the clinics and instruct them in the meaning of the flyer's message. Radio Gambia messages encouraged mothers to go to the clinic to get a flyer and an explanation. This flyer was less widely distributed than the Mixing Flyer. At the end of the feeding message phase in September and October 1983, only 27% of the sample mothers had seen the feeding flyer, and 22% could show it to the interviewer.

- the Hand-Washing Poster (900 copies), produced entirely in Banjul, for the mini-campaign, the project's last phase in early 1984. The poster promotes hand-washing before eating, before preparing food, after use of the toilet, and after cleaning a baby with dirty diapers. This graphic was also for health workers, who received copies at training sessions. The messages were reinforced by radio messages as always.
- the Happy Baby Flag (950 copies), the red flag that the Red Flag Volunteers hung at the entrance to their compounds to identify their availability to teach the WSS solution. The idea for the flag to identify a village volunteer trained in the treatment of diarrhea was conceived by project staff in consultation with the behavioral psychologist during his visit to The Gambia in January 1982. The design, a 1 meter by 2 meter red cloth flag with a picture of a healthy baby on it, was pre-tested in two villages. Finally, the flags were handprinted by a local artist and distributed at the first health worker training session.

The project staff also took charge of the pre-testing, revision, and final printing of 150 Diarrhea Manuals, following the design of this content by the National Committee on Diarrheal Disease Policy and of its format by the Book Production Unit.

Quite early in the discussions about project materials, research on rural women showed a very low literacy rate, under 3%. Any printed material would clearly have to rely on its visual components. The strategy would be to put the flyers into women's hands, and have the explanation come from the health worker who gave her the flyer and from the regular radio messages. While there had been some discussion among communication theorists about visual

literacy -- that is, to what degree can all people understand all visuals -- the project took a common sense approach combining pre-testing to ensure that the visuals were within the range of the target audience's experience and constant verbal explanation to ensure that the visuals were understood exactly as their designers had intended. In addition, the graphic materials all had minimal explanations printed on them, so that any one who could read could understand the pictures correctly.

Subsequent research found that women who scored high on a pictorial literacy test could understand the mixing flyer. Among women with low visual literacy, those who owned a flyer themselves or had received radio training in "reading" the flyer also understood the flyer. Thus the radio was a successful component of achieving visual literacy.*

Project staff themselves distributed most of the materials to the rural health posts, and from there relied on the cooperation of the health workers and the high regular clinic attendance by rural mothers to get the mass distribution flyers into villages and homes.

The combination of a creative and reliable printing service, an enthusiastic corps of trained rural health staff, and the reinforcement from Radio Gambia, the graphics -- especially the mixing flyers -- were integrated into the project strategy and provided a tangible link to the project in many rural Gambian homes.

* Spain, 1983

IX. THE HAPPY BABY LOTTERY

"Everybody, I think, felt that this lottery idea was kind of crazy or untested, and I kept waiting for people to say we can't do that. Nobody ever did." (Interview with implementation director.) The Happy Baby Lottery was certainly the most innovative of the project's strategies, perhaps the most effective and exciting as well. That it was carried out at all was due to a creative trust that had grown up between the project staff and the Medical and Health officials. A willingness to experiment allowed the lottery idea to evolve over six months, until it had become a thoroughly discussed, if still untested idea, that appeared more and more feasible -- and less and less crazy. The final lottery design was the end product of a planning process that involved long hours of discussion among project staff, close consultation with Medical and Health Department and Radio Gambia officials, and a trial village contest to test the idea in the field.

The idea was to use the lottery to stimulate learning. The project staff wanted to get their graphics material (what became the mixing flyer) into the mothers' hands. The traditional notion of a lottery, in which each ticket (i.e., each flyer) would be numbered might not have gotten the flyer to the women, since a traditional lottery would reward hoarding of flyers by the health workers. And the thought of numbering 200,000 sheets gave additional pause. Another traditional lottery route might have been to mark a few flyers in a special, though unnoticeable way; this might discourage hoarding but it would hardly provide an incentive for distribution. As discussions of the traditional lottery form progressed, project staff realized that such an approach demanded nothing from the individual woman except that she have a flyer in her hand. This approach would not have been a competition that would stimulate learning, but a grab-bag approach where winning was by luck.

Gradually, the concept was refined so that the opportunity to compete would be a traditional lottery based on luck but the actual winning of a prize would be based on actual knowledge. The final plan was this: contests would be held in 72 randomly selected villages over four weeks, or 18 villages per week. Contests would be run by health inspectors and supervised by project staff. The names of the first 18 villages were to be announced on the radio on Saturday, the health inspectors would visit the village on Tuesday to arrange for the lottery contest with the village chief and local health officials, and then the health inspector would return on Thursday to hold the contest. So the villages were drawn by chance from a list of all Gambian villages.

One further bit of luck was needed by village women on contest day. Due to time constraints, only twenty women could compete in each village. To choose these lucky twenty, the health inspector assembled all the women who had come to be in the lottery with their mixing flyer and had each of them draw a plastic bottle cap from a sack. Twenty bottle caps had red marks, and the women who drew these were the Happy Baby Lottery contestants for that village.

These twenty were then sequestered in a nearby compound where they would be unable to observe the contest in the village square. One by one, the women were brought out, supplied with bulk quantities of water, sugar, and salt as well as all the needed containers, and asked to mix the WSS solution under the gaze of the health inspector and the assembled onlookers, including all the women who had hoped to compete but not drawn a red cap. This structure provided a situation in which everyone enthusiastically watched their friends and neighbors repeatedly mix the solution. Without the social environment of the lottery it is hard to imagine how you could get women to watch 20 repeated

demonstrations of correct mixing behavior. If the mother mixed the solution correctly, she won a prize -- a one-liter cup marked with the Happy Baby decal. After the mixing test, she was asked a series of five questions about how to administer the WSS solution; correct answers to at least three out of five of these questions won her a bar of soap, also with the Happy Baby decal. All winner's names were collected for the Grand Prize drawing at the end of the four week lottery period, when fifteen radio cassette recorders -- a very coveted prize in The Gambia -- would be awarded, again on the basis of luck. But the structure of the lottery was such that no one could win anything without knowing the essential message that the project taught.

The statistics on the Lottery in the table below were compiled from records kept by the Health Inspector judges and demonstrate the numbers of people reached by the contest.

Table: Happy Baby Lottery Participants

Number of village contests	72
Number of women who entered village contest with mixing flyer	6,580
Number of women who won a chance to demonstrate mixing the solution	1,440
Number who mixed correctly	1,097
Number who correctly answered at least three out of five questions about administering the solution correctly	1,157
Number of combined participants and spectators in 72 contests	10,728

At the Grand Prize drawing, broadcast over live Radio Gambia, Lady N'Jameh Jowara, wife of the President of The Gambia, drew the names of the fifteen radio-cassette winners. Five community prizes, a 50-kilogram bag of sugar and a 100 kilogram bag of rice, were also awarded to villages that had participated most actively in The Lottery. (The project had previously confirmed traditional means of sharing such donated goods existed in the villages so that this food would not be monopolized by individuals).

Radio Gambia promoted the Happy Baby Lottery beforehand and during the actual four weeks of contests, then broadcast the final drawing and taped interviews with radio winners in the villages. There is no question that the Lottery created widespread interest; about half the women in the country were aware of the Happy Baby Lottery. Women were told by Radio Gambia that to enter you had to have the flyer and to win you had to know both how to mix the WSS solution and to administer the solution (the points on administration were not on the flyer, but were repeated and repeated by the radio and supposedly by the health workers). Indeed, three months after the lottery, a large proportion of sample women who had heard of it could remember several details about it. Mixing knowledge also soared at this time.

The Lottery was clever. Not only did women have to both have and understand the flyer to win, but the considerable number of spectators who watched the twenty contestants learned the mixing process after watching twenty demonstrations. In fact, the audience participated with great enthusiasm, at times unable to bottle up their involvement and coaching the contestants with clucks and cheers. Audience participation was less possible when the contestants were being asked about the administration questions; this quizzing was usually done, sotto voce, off to one side by an assistant to the

Health Inspector, so the audience did not hear the five questions repeated twenty times. Had the sequestered contestants been sequestered farther away and had more time been available, it may have been advisable to conduct this part of the contest more loudly so that all the spectators might learn the right responses.

The fact that the Lottery was scheduled to be held in 72 villages all over The Gambia and was in fact held in all 72 bears emphasis. No logistical task is easy in The Gambia, and the logistics of the Lottery were indeed formidable. Just two weeks before the Lottery began, a major shortage of petrol for government vehicles threatened to cancel the whole thing because the Health Inspectors would have no fuel for their motorcycles. Project staff had to give supplemental petrol money to all eighteen Health Inspectors who were acting as lottery judges. (Each judge received a small honorarium as well, and a Happy Baby t-shirt, which seemed to be the most prized of all.)

The ability of project staff to get around the country quickly was critical for the support of the Lottery. In three months, they made six complete treks around the whole country -- to let rural health staff know about the lottery and recruit judges, to distribute mixing flyers, to train the judges and deliver contest materials (cups, soap, etc.), to oversee the first week's contests, to collect the names for the grand prize drawing, and to distribute prizes to the grand prize winners. The demands on petrol (particularly during the government's petrol shortage), on vehicle maintenance, and on staff allowances and overtime may have exceeded what the government would be able to allocate to it, but this continual on-the-scene presence went a long way toward making the Lottery happen. Project staff worked long and hard, and they motivated the health inspectors to do likewise. Though project staff made a heroic effort to be in the field as much as

possible, the Health Inspector judges were still on their own most of the time, and had to deal with contingencies and obstacles on their own. Something of the results orientation of project staff was communicated to these judges, because they were steady in their determination to hold all the contests and creative in the ways they would get around the inevitable obstacles that came up. In a far flung operation like the Lottery, where the field staff is isolated and only quasi-supervised, generating initiative among that field staff is what gets results.

This cooperation from the Health Inspectors stemmed in good part from the health worker training sessions held in the second quarter of 1982. The Lottery, held in the third quarter of 1982, certainly benefited from the enthusiasm generated in those sessions, and the successful carrying out of the Lottery is a further indication of the success of that training. For a while, the project had considered hiring and training a separate staff just to be lottery judges; that was a fearsome prospect, really, both in terms of the burden of training implied and the unknown quantity of all new people working pretty much on their own for a short but critical period. Using the Health Inspectors -- a well-trained group even before the project's supplemental training -- was possible because of the enthusiasm of the Health Inspectors themselves and the unwavering support of the Medical and Health leadership who never backed off from their commitment to the Lottery.

The Lottery was held in September and early October, after the busy planting time but just at the end of the rains when infant diarrhea would still be very common. It was the culmination of the 1982 rainy season campaign, when the emphasis was on the mixing and administration of the WSS solution.

The Happy Baby Lottery represents the principal social marketing tool of

the MMHP project in The Gambia. As such, it incorporated the exciting attention-grabbing elements of good salesmanship (the small prize leading to the Grand Prize, the community prizes, the President's wife, the prestige of the radio) with the motivational factors of good teaching (rewards for learning, rewards for having the flyer, the esteem of the community for successful mixing in public, using the "teachable moment" -- that is, teaching about diarrhea at the peak of the diarrhea season). And, at the end of the Lottery, the radio messages congratulated the prize winners but encouraged all women who had made the effort to learn about the WSS solution to realize that they had taken giant strides toward the even greater prize -- maintaining the health of their children.

We should stress, to those interested in replicating the Lottery elsewhere, how much support the Lottery received from the health worker training and the radio reinforcement. The Lottery did not stand alone.

X. INSTITUTIONALIZATION

The main focus of institutionalization was to train Gambians in the project educational methodology. This was done by working with counterparts in the Health Education Unit, providing some formal training, coordinating activities with other units such as Radio Gambia and the Book Production Unit, integrating project activities into ongoing concerns of the Medical and Health Department, and, lastly, coordinating a "mini-campaign" at the end of the project.

A. Mini-Campaign

When the project was extended an additional year, the stated purpose, for both Medical and Health and AID's Science and Technology Bureau in Washington, was to establish within the Health Education Unit an institutionalized capacity to carry on the MMHP project's educational methodology after the departure of the implementation staff. With a view toward these purposes, the implementors planned a "mini-campaign" for the project's last months. The mini-campaign tried to incorporate all the aspects of the project's campaign strategies, compressed into a shorter time frame and with more modest goals reflective of the level of effort possible within the HEU after the withdrawal of the foreign resources.

Central to institutionalization was the question of counterparts. The implementation staff lobbied for a full time counterpart. Such an arrangement had already been formally agreed to in the project agreement, but the interruptions of training and the pull of many duties on the one or two people in residence had made the counterpart relationship a sometimes thing. To staff the mini-campaign, the Health Education Unit compromised with the implementation team: the mini-campaign was acknowledged to be a priority

activity within the Unit. Both Gambian health inspectors would spend major parts of their time on the mini-campaign though neither would be fulltime. The more senior Gambian, the director of HEU, involved himself in the planning phases of the mini-campaign, while the junior Gambian recently back from Nigeria would work more on the operational side of the mini-campaign -- the research and pre-testing, the development of messages, the training of rural health staff, and the formative and summative evaluations. In addition, another health inspector was on part-time loan from the Nutrition Unit -- though not the woman who was the project's initial counterpart.

The result was that, although no one counterpart worked through the entire mini-campaign process a number of people were involved substantially in various aspects of the process. They saw from direct involvement with the developmental investigations, pre-tests, and formative evaluation how much can be learned from research and how limited are the ideas developed solely in offices in Banjul or Washington without the input of representatives of the target audience. In addition, they learned the necessary discipline required to simplify the message, and that they need to resist the temptation to try too much in one campaign.

B. Evidence of Methodology Transfer

There are numerous examples of the incorporation of aspects of the methodology into new government activities. In the initial phases of the implementation, MMHP staff worked with the first HEU counterpart on message design development, pre-testing, health worker training, and the Happy Baby Lottery. One year and a half later, she was eager to attempt a new campaign with her present unit, Nutrition.

Other personnel showed similar signs of knowledge of the project's

methodology, and willingness to act on that knowledge given sufficient resources. Governmental agencies such as forestry were pre-testing graphics before producing them at the Book Production Unit, where the artists were now used to notions of pre-testing. Radio Gambia staff was particularly interested in the results-oriented methodology, and several producers there requested help with formative evaluations of their education radio programs. They were keenly convinced of their need for more feedback from their audience, and lamented their limited capacity to do research. In addition, new format types such as quiz shows coordinated spots, and magazine formats were being tried in other programs after the MMHP campaign.

Other enthusiasts of the educational methodology included the directors of Medical and Health and most unit heads. In private interviews, they were able to describe the important features of the MMHP approach, and most hoped the Health Education Unit would be attempting more grassroots education in the future. One regional medical officer listed the following lessons taught by the MMHP experience: (1) the educational methodology emphasized "delivering the goods," not just disseminating information, but educating; (2) appropriate use of resources; (3) the value of built-in evaluation; and (4) the audience is broad and should be involved, from doctors, nurses, and community health nurses to mothers. At the end of the mini-campaign, the directors of Medical and Health were hoping to do the next campaign on nutrition, a choice that would take advantage of the projects earlier counterpart now in Nutrition.

Within the health education unit itself, there was also an understanding of the educational methodology and the concepts behind it. All the staff members were comfortable with notions of pre-testing and formative evaluation, for example, by the end of the mini-campaign.

All this being said, the prospects of genuine institutionalization are

influenced by the institutional environment. The lack of a permanent long-term counterpart in a position to carry forward the project approach, the many pulls on the people who did work with the projects, the thin resource base of the Medical and Health Department, the disruptions of seminars and training sessions in other countries -- these realities exist already and will continue to make establishment of the project's education methods more difficult.

Despite widespread knowledge of the MMHP educational techniques, little had been done in the way of planning new large-scale coordinated outreach programs by the time the Stanford evaluation team finished in The Gambia. Most of the HEU activities concentrated on training programs and poster production in the capital city. The unit was still responsible for coordinating health programs on the radio, but the careful research for development and pre-testing was not being done. While the interest in using project methodologies was keen, difficult logistics and resource limitations were impediments to undertaking new campaigns.

One possible solution to the logistical problems might be to integrate the campaign more closely with the growing Primary Health Care System in The Gambia. The Red Flag Volunteers, trained by project staff and then left to their own devices, represent potentially underutilized resources. Without follow-up, supervision, or compensation, the rural volunteers will probably gradually cease their activities and take down their weathered flags. Close coordination with the staff and activities of the Primary Health Care Program would improve the effectiveness and longevity of their workers.

Additionally, the importance of teaching its educational methodology on a regional as well as a national basis became apparent during the mini-campaign. In future endeavors, efforts should be made to increase contact between the health education unit and regional health teams. The trek teams

are in a better position to do research in the field than the Health Education Unit during fuel or staff shortages. They could also be called on to supervise village-level workers, on the order of Red Flag Volunteers, if they felt sufficiently involved in the outreach campaign.

Above all, the educational methodology was well-received and equally well-learned in principle by the involved Gambians; the greatest hindrance to institutionalization was a lack of resources -- staff, finances, and ample petrol. Some of the problems can be solved with donor help.

One effective way for the Medical and Health Department to attract additional donors is to have a clear plan of what they want to do. The experience of the MMHP project has demonstrated that clarity and consensus are essential first steps in any implementation process, steps which give direction to everything that comes later.

XI. SUMMARY

The MMHP project went to extraordinary lengths to be simple. Amid a whole array of possible health interventions, it chose diarrheal disease control. From all the approaches to diarrheal disease control, it chose oral rehydration based on a homemade WSS solution. From all the possible messages about WSS solution, it chose a single formula, a few administrative guidelines, and one or two prevention tips. These messages were then bombarded onto the target audience in all the clever and arresting ways that the implementors could dream up, but always just a few key points repeated regularly through different media.

In terms of evaluating the process, this is what we found as the most basic lesson: efforts should be simple and focused. The use of behavioral psychology with its behavioral design principals was a crucial tool in this process. The commitment to research before the project went public was another. For all the expertise involved in planning this work -- the doctors, the communicators, the psychologists, the social scientists -- the messages remained uncomplicated and few.

The project focused on a few concrete results that could be measured and it monitored its own success at reaching its goals. The monitoring made it possible to see ways to get better results.. This results orientation made project methods flexible. The project was interested in getting results in any way that worked. This kind of thinking was what led to the Happy Baby Lottery, to the emphasis on feeding in the second year, to the heavy use of highly visual graphics, and to the invigorating perception of getting something done that comes from regular monitoring. Health worker training had remarkable payoff. The project staff could know if they were getting the results they wanted, because of their commitment to measurable indicators, and

to monitoring how well they were achieving them.

A third lesson was the integration of media. The health worker training, the radio, and the graphics all fit together in the complementary way some people call synergy. The elimination of any one would have seriously undermined the other two. The Happy Baby Lottery was a fresh idea that deftly blended the best of all three. (The lottery also well illustrates our first point: the painstaking refinement of an originally quite complex brainstorm down to a simple, straightforward elegance that achieved the desired results.) All three channels were necessary to the successful completion of the campaign. The health worker training yielded a great payoff, with most women learning about the mixing of the WSS solution from the health workers in the field.

The use of the mixing flyer and other visuals overcame the obstacle of illiteracy and the use of health workers and radio to explain the visuals overcame any questions about visual literacy. Finally, radio tied it all together, supporting the messages of the health workers, explaining the flyers, and keeping the project's messages before the attention of village women.

The management style of the implementation team was one of hard work that elicited hard work from others and a search for consensus that in fact won the consensus of all the principal groups involved in carrying out the project. The project had a clear focus from the start -- the management of infant diarrhea to reduce infant morbidity and mortality. The implementors managed with these desired results ever in mind; the hard work and the search for consensus revolved around methods to get those results. The success at achieving those results is testimony to the effectiveness of their methods.

APPENDIX A

THE MASS MEDIA AND HEALTH PRACTICES EVALUATION
IN THE GAMBIA:
A REPORT OF THE MAJOR FINDINGS

EXECUTIVE SUMMARY

This summary reports the major findings from the evaluation of the USAID Mass Media and Health Practices activity in The Gambia. The program in The Gambia was known as the Mass Media for Infant Health Project, and it was active from mid-1981 to mid-1984. It was an undertaking of the Department of Medical and Health in the Ministry of Health, Labour, and Social Welfare with the collaboration of the Academy for Educational Development. The evaluation was performed by Stanford University's Institute for Communication Research and Food Research Institute, and by Applied Communication Technology. Both the intervention and the evaluation were funded by the Office of Education and the Office of Health of the Bureau for Science and Technology, United States Agency for International Development. The USAID Mission in Banjul and the Department of Medical and Health have provided additional support and cooperation.

The purposes of the Mass Media for Infant Health Project were: to introduce home-based oral rehydration therapy and other behaviors related to the treatment and prevention of infant diarrhea in the rural areas of The Gambia; and simultaneously to develop improved methods of using mass communication in conjunction with existing health services in an integrated campaign. The target behaviors included treatment of acute cases, preventive actions that mothers can perform, and related nutritional and breastfeeding practices. The treatment behaviors involved mixing and administering in the home an oral rehydration solution made from water, sugar, and salt (WSS).

The Mass Media for Infant Health intervention consisted of an integrated campaign carried out through broadcast, print, and interpersonal channels to deliver a coordinated set of messages about a fairly narrow set of issues - responses to infant diarrhea. The knowledge and behavioral objectives and the strategies for behavioral change were developed using intensive planning research and the principles of behavioral analysis. The campaign incorporated elements of social marketing and systematic development of messages using formative evaluation. The project worked with professionals in the Department of Medical and Health and at Radio Gambia to create an environment in which these methods would remain in use after the project was completed.

The evaluation found that the introduction of the oral rehydration solution (ORS) was successful. More than half of all episodes of diarrhea were being treated with WSS during the second year of the campaign. Knowledge of how to mix WSS correctly was high; more than 70 percent of all mothers knew the exact formula. Other behaviors were also changed by the campaign. Feeding of children during and after episodes of diarrhea

improved, and activities for personal hygiene and compound sanitation were increased.

The evaluation tracked the process of the intervention's effects during its two years of effort, as well as measuring the overall impact at the end. It used a model of the program effects that stipulates that, in order for a final health status outcome to be achieved, a series of interim steps must be successfully completed. The evaluation of these steps included investigating whether: the target population had access to the channels of communication used by the campaign; the messages actually reached the population through those channels; the content of the messages was learned and retained by the audience; members of the target audience actually changed their behaviors in response to the campaign; and the health status of children improved as a result of these changes in behavior.

The reporting of findings about these different levels of effect is organized into three major categories, which correspond to the second, third, and fourth chapters of this report. Following an introductory chapter describing the context and the research and measurement plans of the evaluation, the subsequent chapters take up, in turn: access and exposure to campaign elements and cognitive changes resulting from the exposure; behavioral changes related to infant diarrhea; and health status changes. This summary will report the findings in the same order.

The context within which the project operated is representative of many characteristics of West Africa. The climate has clearcut rainy and dry seasons, and the nature of the diarrheal disease problem changes with the seasons. People live in compounds with extended families. Their houses are usually mud or mud-brick with earthen floors. Cooking is done over an open fire. Very few rural communities have electricity. The population is culturally and linguistically diverse. The requirement to use a limited number of languages for broadcast mandated the use of the local trade languages, Wolof and Mandinka. The fundamental heterogeneity of concepts and practices pose special difficulties for mass media-based projects; planning research is all the more important in the face of such variabilities. The media environment is simple, however, because the single central government radio station, Radio Gambia, has little competition, and the general environment is not saturated with broadcast or print messages.

In this context, the Mass Media for Infant Health Project designed and carried out an innovative campaign integrating use of radio, print, and interpersonal channels. The design built on a four-month developmental investigation, using the information acquired there to develop training for health workers, messages directed at mothers, and other activities. Message content was synchronized to seasons to ensure its appropriateness for the most salient current problems. Village volunteers were

trained, and a national contest, the "Happy Baby Lottery" was devised to enhance the distribution of and attention paid to a pictorial instruction sheet, the "Mixing Flyer." The different media channels were carefully developed to play complementary roles in the project.

The evaluation design included a number of different studies with different methodologies, but relied primarily on large-scale survey data from repeated visits to a panel of mothers of small children. A sample of roughly 1000 mothers was selected from 20 communities; about 800 of these mothers were visited monthly for interviews about various aspects of the campaign. To control for the influence of repeated measurements on the sample mothers' knowledge and behaviors, comparison groups were also measured in an additional eight communities that received all the elements of the campaign but not of the evaluation. The experimental and control samples were structured to yield quasi-equivalent groups of women of child-rearing age that were representative of the full range of differences found in The Gambia. Examples of the other study approaches include anthropometric measurement, behavioral observations, community mortality, and health professional interviews.

Access to the channels used by the campaign was very good. Radio reception was clear in the measurement areas (one division was excluded from the very beginning because of unreliable radio coverage). People live in compounds that may contain more than one family, and they often listened to radios that belonged to other people in the compound. Interviewers asked women to demonstrate a working compound radio if they could, and 60.5 percent of the mothers succeeded. A total of 67 percent of women reported that they listened to the radio either daily or several times a week, with the heaviest listening taking place in the evening.

Access through interpersonal channels was also high. The health care system in The Gambia penetrates into the rural areas fairly well, and the small size of the country means the distances to service points are less daunting. Nonetheless, only 15 percent of mothers in the sample lived in communities that had full time health care facilities, and an additional 35 percent lived in places that were served by traveling teams of health workers. Three-quarters of the villages in the sample were served by a "Red Flag volunteer," a local mother who received special training from the project in oral rehydration therapy (ORT) and served as a local training resource.

Print channels were objects of special emphasis in the evaluation. Mothers' literacy was very low (2.9 percent), although a third of the compounds could at the time of the interview, present someone who could read. Printed materials were virtually non-existent in rural homes. Thus print channels had to be utilized in a way that did not depend on ability to read, or even necessarily on pictorial literacy. A special study

on pictorial ability showed that although the majority of mothers could identify simple line drawings, there were limits even to this. These issues were particularly important because flyers distributed during the campaign had to be designed to be used in conjunction with other channels as well in order to play a major role in disseminating knowledge. The flyers, carefully designed to bypass these limitations, were well understood.

Exposure of mothers to the campaign messages is the second link in the chain of events leading to health status impacts. Radio coverage varied over time but was generally quite high. In the first year, when a lottery was used as a part of the program, radio exposure reached high levels. About two-thirds of the women (68.5 percent) eventually reported having heard radio broadcasts about diarrhea. For topic areas of the campaign that were not treated in the Happy Baby Lottery or that were given less emphasis, exposure levels were lower. A maximum of about one-third of mothers reported that they recalled being exposed to radio messages about feeding.

The lottery, which was held midway into the first year, was associated with high levels of exposure and knowledge change. About half (48.9 percent) of all mothers reported awareness of the lottery when asked about it. When asked to name characteristics of the lottery activity, mothers who had reported awareness were able to describe features of the lottery at high levels. Of mothers who were aware, 94 percent could give at least one detail and 84 percent could give at least two details about the terms of the lottery. The print material associated with the lottery (the mixing flyer) achieved extremely high exposure levels - - much higher than for the lottery itself. After the lottery, 79 percent of mothers reported having seen the flyer, and 71.5 percent of all mothers could actually show the interviewer their copy of it. This points out the importance of having more than one channel of information, since women got the flyer and learned from it even when they didn't receive the radio messages about its relationship to a lottery.

Awareness of the presence of a Red Flag volunteer in town reached a high of 77.8 percent, an indication that there was good exposure to this interpersonal channel. Contact with regular health care personnel was also high. When asked to think back over the three months prior to an interview, 80 percent of mothers of young children said they had been to a health clinic about the health of their children during that time. Because roughly two-thirds (69 percent) of women reported that they received advice or instruction during health worker contacts, this level of exposure to health workers implies that health workers have a very important role as transmitters of campaign messages. In fact, for mothers who were aware of WSS, an average of over 80 percent reported that one of the sources from which they learned about it was from health workers.

Learning of the content of campaign messages was the next area investigated. During the campaign, awareness of and specific knowledge about WSS increased steadily during the first year, when radio messages focused on WSS. Increases in knowledge about WSS leveled off in the second year, when messages focused on feeding and sanitation. The mothers seem to have needed continued high levels of information to maintain learning. Overall awareness of WSS climbed to 90 percent during the campaign.

The largest increase in knowledge was for the mixing proportions to make WSS. At the start of the campaign, only one mother knew how to mix WSS correctly. By the end, 70 percent of the mothers and all of the health workers knew the correct proportions. Thus, the most important of the educational objectives was achieved at a very high level.

Learning of administration instructions started out and remained high for the most important content. The percentage of mothers who knew to start giving WSS at the first sign of diarrhea fluctuated between 72.8 percent and 93.6 percent, while the percentages knowing to administer it with a cup or spoon ranged from a low of 73.1 percent to a high of 93.7 percent. There is some indication that mothers became confused by some of the radio messages about how long to keep giving the solution. Mothers also showed differing rates of learning for different administration instructions, some of which were learned after the lottery had ended. Overall, mothers needed time and continued reinforcement to learn about WSS administration.

One major content area of the campaign was teaching about dehydration. Immediately after the broadcast emphasis on signs of dehydration was completed, mothers could name an average of two signs of dehydration. When an additional year had passed with no emphasis on dehydration signs, they could only name an average of 1.2 signs.

The campaign seems to have had no effect in convincing mothers that WSS does not stop diarrhea. This may be because mothers refused to believe that a medicine recommended for diarrhea wouldn't stop it or because diarrhea tends to stop after two or three days anyway.

Health personnel also learned from the campaign. They received interpersonal training and printed materials, but they too also seemed to have benefited from radio broadcasts. Learning of the material covered in the broadcasts was higher than learning about treatment of different levels of dehydration (only covered in the manual and workshops).

During the campaign, increases in correct knowledge were seen for continuing to breastfeed during episodes of diarrhea and feeding of additional solid foods after diarrhea. The high levels of knowledge were maintained after radio messages de-

creased. The campaign was not successful in teaching mothers that solid foods should be given during diarrhea. A majority of mothers also did not learn that solid foods give more "power" than paps. These two beliefs seem related and may be part of mothers' traditional beliefs about the treatment of sick children.

A separate study examined the relationship between exposure to Radio Gambia and knowledge about WSS after removing the influence that other factors might have on the relationship. The analysis found that: mothers with high radio exposure were significantly more likely to know something about WSS than mothers with low radio exposure; mothers with interpersonal sources of information (health worker, Red Flag volunteer, or other mothers in the compound) were more likely to know about WSS than mothers without such contact; but, for mothers with low interpersonal contact, frequent listening to the radio could teach them about WSS.

Health-related behavior change is the next step in a successful path to summative project impact. The evaluation focused its analysis on three major topics: behaviors related to feeding, behaviors related to treatment of diarrheal episodes, and direct observation of the process of treatment. By far the greatest emphasis in the campaign was on the promotion of home treatment of diarrheal episodes with WSS, and it was in this area that the largest changes were seen. The proportion of cases that were treated with WSS rose from 3.6 percent in the first measurement period to 49.4 percent in the twelfth. Thus, the use of WSS as a home treatment achieved a very high level of adoption within two years. Among the effects of this change were that the percentage of cases being treated at health centers dropped from 80.6 percent to 59.2 percent. This represents a savings for the mothers in the time and cost of visiting the clinic, and for the Ministry of Health in terms of demand on health facilities.

Not only was the proportion of cases treated at home rising because of the adoption of WSS, but the WSS treatment was displacing virtually all other home treatments. If one restricts the analysis to those treatments chosen for cases treated at home, WSS rose from 21.7 percent in the first measurement period to 94.1 percent in the twelfth. Because many of the previously used home treatments were either ineffective or possibly harmful, the displacement effect represents a significant improvement in the "quality of care" beyond the simple rise in percent of cases treated with WSS.

Virtually all mothers in our sample reported that they breastfed their infants. The percentage of mothers breastfeeding their youngest child fluctuated over time but never fell below 87.9 percent. The percentage of mothers who gave only a bottle to their youngest child ranged from 0.7 percent to 9.1 percent.

The only real room for improvement in breastfeeding was change in such aspects as breastfeeding during diarrhea and weaning behaviors. The campaign promoted a better diet for children during and after diarrhea. Breastfeeding continued during a bout of diarrhea for 85 percent or more of the mothers. The inappropriate practice of stopping other feeding during diarrhea fell from 31.5 percent to 3.4 percent, and the giving of solid foods rose from 13.6 to 44.6 percent. The giving of special additional food after diarrhea hovered around two-thirds of the cases, rising briefly to a high of 91 percent after a particular campaign emphasis on it, but falling back to its previous range shortly after the messages were withdrawn. Ages at the beginning and end of the weaning process differed considerably across measurement periods; the changes appear unsystematic, but may be related to season, a drought in 1983, or economic conditions.

A number of additional analyses about WSS use were carried out. Treatment probability appeared to be only very weakly related to age - - the changes over time in proportion of cases treated with WSS by age were consistent across all age groups. There may have been a slight tendency for the oldest children to be treated less frequently in the second year of the campaign.

The relationship between completeness of knowledge and use of WSS was also investigated. The mixing and administration behaviors are complex, but, in the aggregate they were well learned. However, treatment with WSS must be accurately done in order to be clinically effective and risk free. At the time of the first measures, some home treatment with WSS was being done, because of previous Medical and Health Department efforts. However, none of the women treating with WSS at that time knew the proper formula, defined here using the strict criterion of a perfect score on all the mixing questions. By April of 1983, 49.4 percent of all episodes were being treated, and 41.0 percent of all episodes were being treated by women who had perfect scores on the mixing questions. Thus, 83 percent of the treated cases received WSS from mothers who knew exactly how to mix it. This finding provides reassurance that the success of the campaign in WSS adoption is likely to have a positive clinical impact.

A separate observational study was also conducted in order to provide a comparison to the self-reported data of the surveys. The observational study provides strong support for the validity of the basic findings from the survey research - - the proportion of cases being treated was high and correctly mixed WSS was being used.

Fieldworkers carried out direct observation of the morbidity and treatment characteristics of 39 cases of children ill with diarrhea. The children in the study all had acute diarrhea and were fairly sick. The diarrheal episodes had lasted an average

of 3.3 days when the observer arrived, and the children had bowel movements an average of once every hour-and-a-half during the observation period and vomited an average of once every two hours.

The observed feeding practices support the validity of the self-reported levels. Pap was given to 87 percent of the children, 74 percent were breastfed (an unknown number were already weaned), and 64 percent were given solid foods. A total of 67 percent of the observed children were treated with WSS. The treatment was already going on when the fieldworker arrived for 28 percent of the cases, and in the remaining 38 percent of cases that received WSS, the treatment was begun after the fieldworker arrived. For cases that began treatment after the fieldworker arrived, it was possible to observe the mothers' mixing behaviors. All of the mothers got the formula and mixing process exactly right, which is slightly better than the analysis of self-reported levels. All WSS administration was done by cup or spoon. Concurrent treatment with other home remedies was much higher than mothers self-reported - - herbal teas and pills were the other main home treatments, but WSS was still given about two-and-a-half times as often as the next most frequent treatment. Cases that were more severe were significantly more likely to receive larger amounts of WSS and more frequent feedings.

Health status change was the long term objective of the intervention. The analysis of morbidity data on prevalence revealed strong seasonal influences along with marked variation in levels from year to year. Point prevalence estimates ranged from a low of 0.8 percent to a high of 9.0 percent; two week prevalence ranged from 10.4 percent to 33.7 percent. By any standards, these are high rates. Rainy seasons showed higher prevalence rates and longer lasting episodes; dry season cases had a slightly higher tendency to be associated with reduced urine output and dry eyes, both signs of dehydration. Younger children had higher rates of disease, with weaning age showing the peak rates. However, the characteristics of the cases of old and young children, given that they had diarrhea, did not differ by age.

Estimates for historical rates of infant mortality were derived from pregnancy history data after attempts to elicit concurrent measures by surveying communities were thwarted by community resistance. The causes of death reported by mothers for their children of all ages had diarrhea in second place at about a quarter of all deaths. The pregnancy history yielded a historical estimate of infant mortality of 153.7 per thousand. This estimate is very high in an absolute sense, but it may be too low because of poor recall or reluctance by mothers to give out the information.

Extensive anthropometric measurement of sample children was carried out. Gambian children, when compared to NCHS standards, were one to one-and-a-half standard deviations low in height.

Their age-specific weight for height values fell from nearly normal to about one standard deviation below normal over the course of the two-year intervention. The measures of stunting were essentially constant over time, while prevalence of wasting tripled. Measures of skinfold thickness and arm circumference and calculated values for arm muscle area and arm fat area all showed consistent trends - - that children became considerably leaner and more wasted. This is assumed to reflect effects of the drought and economic crisis, rather than an impact of the intervention.

To summarize, the evaluation found that the campaign had the following impacts:

There was good access to all the communication channels used by the campaign;

The target audience was heavily exposed to campaign messages through those channels;

The exposure resulted in learning gains across virtually all the topics covered in campaign messages;

The audience adopted the promoted behaviors at high rates and sustained the behavior changes over time at high enough rates and with sufficient accuracy that an impact on health status could be expected;

The nutritional status of children worsened over time in relation to the drought and worsening economic situation.

The pattern of findings is consistent and provides strong support for the conclusion that the approach used by the campaign can be a very effective tool for accomplishing change in health behaviors in rural populations. It also suggests strongly that when the behavioral change being advocated is adoption of home-based oral rehydration therapy, the complex behaviors involved can be taught to a sufficient degree of accuracy that impact on aggregate health status can be expected.